CLAIMS

1. A method of making a read head, comprising:

forming a read sensor which is abutted by longitudinal bias layers; and

selectively depositing lead layers over the longitudinal layers with use of a silicon reduction process and a hydrogen reduction process.

2. The method of claim 1, wherein the lead layers are selectively deposited over the longitudinal bias layers without a photoresist formed over the read sensor.

3. The method of claim 1, further comprising:

wherein the read sensor is formed in a top-type configuration with one or more free layers in a lower portion thereof; and

wherein the longitudinal bias layers has a midplane in alignment with the one or more free layers.

4. The method of claim 1, further comprising:

wherein the longitudinal bias layers are deposited in side regions of the read sensor with use of a monolayer photoresist formed over the read sensor in a central region; and

prior to selectively depositing the lead layers, removing the monolayer photoresist.

5. The method of claim 1, wherein the act of selectively depositing the lead layers with use of the silicon reduction process comprises the further acts of:

depositing a silicon reactant layer over the longitudinal bias layers; and

passing a carrier gas which includes lead layer material so that the carrier gas is chemically reduced by the silicon.

6. The method of claim 1, wherein the act of selectively depositing the lead layers with use of the silicon reduction process comprises the further acts of:

depositing a silicon reactant layer over the longitudinal bias layers;

passing a carrier gas which includes lead layer material so that the carrier gas is chemically reduced by the silicon; and

wherein the lead layer material comprises tungsten (W).

7. The method of claim 1, wherein the act of selectively depositing the lead layers with use of the silicon reduction process comprises the further acts of:

depositing a silicon reactant layer over the longitudinal bias layers;

passing a carrier gas which includes lead layer material so that the carrier gas is chemically reduced by the silicon; and

wherein the carrier gas comprises fluorine (F).

8. The method of claim 1, wherein the act of selectively depositing the lead layers with use of the silicon reduction process comprises the further acts of:

depositing a silicon (Si) layer over the longitudinal bias layers;

passing a carrier gas comprising fluorine (F) which includes lead layer material comprising tungsten (W) so that the carrier gas is chemically reduced by the silicon to selectively deposit the lead layers; and

wherein the following chemical reaction occurs in the silicon reduction process: $2WF_6 + 3Si \rightarrow 2W + 3SiF_4$.

9. The method of claim 1, wherein the act of selectively depositing the lead layers with use of the hydrogen reduction process comprises the further acts of:

passing a hydrogen and a carrier gas which includes lead layer material, so that the carrier gas is chemically reduced by the hydrogen gas.

10. The method of claim 1, wherein the act of selectively depositing the lead layers with use of the hydrogen reduction process comprises the further acts of:

passing a hydrogen gas and a carrier gas which include fluorine (F) and tungsten (W), so that the carrier gas is chemically reduced by the hydrogen gas to selectively deposit a W film; and

wherein the following chemical reaction occurs in the hydrogen reduction process: $WF_6 + 3H_2 \rightarrow W + 6HF$.

11. The method of claim 1, further comprising:

wherein the read sensor abutted by longitudinal bias layers is formed by:

forming a plurality of read sensor layers over a wafer;

forming a photoresist over the read sensor layers in a central region;

ion milling, with the photoresist in place, so that read sensor layers in side regions are removed to thereby form the read sensor only in the central region;

with the photoresist in place, depositing the hard longitudinal layers in the side regions;

removing the photoresist;

after removing the photoresist, selectively depositing the lead layers over the longitudinal bias layers with use of the silicon reduction process and the hydrogen reduction process.

12. The method of claim 1, further comprising:

wherein the read sensor is formed in a top-type configuration with one or more free layers in a lower portion thereof; and

wherein the longitudinal bias layers comprise a Co-Pt-Cr film with a midplane in alignment with a midplane of the one or more free layers.

13. The method of claim 1, wherein the act of selectively depositing the lead layers is performed in an integrated high-vacuum physical-vapor-deposition (PVD)/chemical-vapor-deposition (CVD) system

14. A method of forming a read sensor for a magnetic head, comprising:

forming a plurality of read sensor layers over a wafer;

forming a photoresist over the read sensor layers in a central region;

with the photoresist in place:

ion milling so that read sensor layers in side regions are removed to thereby form the read sensor only in the central region;

depositing the longitudinal layers in the side regions;

depositing a silicon layer over the longitudinal bias layers in the side regions;

removing the photoresist; and

selectively depositing lead layers over the longitudinal bias layers in the side regions with use of a silicon reduction process and a hydrogen reduction process, by passing a carrier gas which includes lead layer material over the structure so that the carrier gas is chemically reduced.

15. The method of claim 14, wherein the lead layer material comprises tungsten (W).

16. The method of claim 14, wherein the carrier gas comprises fluorine (F).

17. The method of claim 14, wherein the lead layer material in the carrier gas comprises tungsten hexafluoride (WF_6).

18. The method of claim 14, wherein the following chemical reaction occurs for the silicon reduction process: $2WF_6 + 3Si \rightarrow 2W + 3SiF_4$.

19. The method of claim 14, wherein the following chemical reaction occurs for the hydrogen reduction process: $WF_6 + 3H_2 \rightarrow W + 6HF$.

20. The method of claim 14, further comprising:

wherein the plurality of read sensor layers are formed with a top-type configuration such that one or more free layers are located in a lower portion thereof; and

wherein the longitudinal bias layers are deposited so as to be in alignment with the one or more free layers.

21. The method of claim 14, further comprising:

wherein the plurality of read sensor layers are formed with a top-type configuration such that one or more free layers are located in a lower portion thereof;

wherein the longitudinal bias layers are deposited so as to be in alignment with the one or more free layers;

the one or more free layers comprising at least one of nickel-iron and cobalt-iron; and

the longitudinal bias layers comprising a cobalt-based alloy.